

REMARKS

Claims 1-15 remain in this application. Claims 2 and 5 have been amended and new claims 7-15 have been added to present the same claims that were rejected in the Office Action of September 23, 2003 in the parent of this application. Applicants believe that these claims distinguish over the art cited by the Examiner in that action and respectfully request that the Examiner reconsider his rejections in view of the comments below.

In the previous response, Applicants noted that the presently claimed invention is patentably distinct from what is taught in the reference in that the "claimed invention requires a deflection which makes the size of the parallelogram variable. Miyajima et al. fails to show this feature of the claimed invention. Also, the claimed invention is characterized by a fine parallelogram aperture (about 1 μm) for exposure of only the oblique portion so that an oblique portion may be drawn with such a fine parallelogram aperture. (See claim 2, for example). In this respect, it should be pointed out that when the pattern including an oblique line is to be drawn with several right angled triangles or small quadrangular shape, edge roughness occurs. According to the present invention, edge roughness can be eliminated by employing a fine parallelogram aperture and by drawing with varying size in the length direction depending upon the size of the pattern to be drawn."

Applicants continue to believe that Miyajima et al. do not teach use of a parallelogram of variable size (variable length) in exposing and drawing an oblique edge or oblique line to avoid edge roughness. Specifically, Applicants note the following:

1. Miyajima et al., does not refer to varying the size of a parallelogram pattern. Contrary to the Examiner's contention there is no teaching of varying the size of the parallelogram, only of positioning the rectangular beam on one of the blocks. Concerning Miyajima et al., the following must be kept in mind:

(1) The triangle or parallelogram pattern is not generated by substantially defining the actual size of the pattern by modifying the beam deflection position on the stencil mask.

(2) The size of the parallelogram pattern is equivalent to the aperture size of the stencil mask itself shown in Fig. 2, and this size is not determined on the basis of the relationship between the size of the aperture 11 and the size of the aperture 12 shown in Fig. 1.

(3) The expressions "shape modification," "modifiable" and "modify modified pattern" are found in the description of preferred embodiments. However, these expressions relate to the internal procedures executed in CPU32 and do not refer to a modification of the actual and physical size of the parallelogram pattern defined on the stencil mask.

(4) The generation of the rectangular pattern is described only as the implementation of the modifiable pattern size. This method for generating the rectangular pattern with a modifiable size by using the rectangular-shaped apertures 11 and 12 is recognized as prior art.

2. The triangle or parallelogram pattern is generated by a block exposure method.

(1) The Miyajima patent is characterized in the use of a block exposure method in which plural stencil masks (a set of apertures) shaped individually, or in a triangular or parallelogram pattern are provided and the exposure pattern is generated by directing the deflected beam to the aperture having a shape corresponding substantially to that approximated by the computer processing. (This is discussed in the specification as having a "similar" shape to one of the block patterns.)

(2) In the block exposure method, CPU 32 processes the input pattern and selects the stencil mask (number) which can best approximate the input pattern. The Miyajima patent is directed primarily to the internal computation procedure executed by CPU 32.

(3) The input data for a shaped in the form of a deviated parallelogram which has a couple of segments that are not mutually parallel to each other or a triangle other than a right-angled triangle are processed by CPU 32 in a modification process, and an existing parallelogram (or a right-angled triangle) aperture, defined in the stencil mask, is selected and then, the exposure beam is directed to the selected aperture which approximates the input data

pattern most closely, and finally the required drawing pattern is obtained. In being so directed, it covers the selected block and does not in any way modify the shape involved be it a parallelogram or otherwise.

Conclusion:

The parallelogram pattern drawing method according to the Miyajima patent uses a block exposure method in which plural stencil masks are provided and the required drawing pattern is obtained by selecting one of the set of apertures (stencil masks) in response to the data processed information.

The method does not anticipate the pattern drawing method claimed by the present invention in which a shape in the form of a deviated parallelogram can be generated by modifying the beam position targeted onto the aperture.

Various features in the dependent claims further bring out the differences between the claimed invention and the prior art. For example, claims 3, 4, 6, 12, and 19 all include the limitation illustrated in Fig. 7(a) and 7(b) of using the parallelogram to construct the oblique side avoiding the problems illustrated in Figs. 8 and 9. The portion at col. 7 cited by the Examiner simply does not teach or suggest this type of operation.

In view of the above, Applicant submits that all claims in this application are in condition for allowance, prompt notice of which is respectfully solicited.

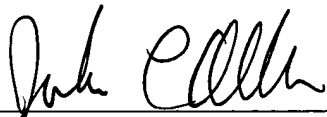
The Examiner is invited to call the undersigned at (202) 220-4200 to discuss any information concerning this application.

The Office is hereby authorized to charge any additional fees under 37 C.F.R. § 1.16 or § 1.17 or credit any overpayment to Deposit Account No. 11-0600.

Respectfully submitted,

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